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New Jersey Department of Transportation - Port Authority Trans-Hudson Corporation

Joint Task Force Report

Central Railroad of New Jersey Corridor

Commuter Transportation Alternatives

January 15, 1975

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PORT AUTHORITY TRANS-HUDSON CORPORATION

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February 7, 1975

Mr. Jerome C. Premo
Associate Administrator
Office of Capital Assistance
Urban Mass Transportation Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

Dear Mr. Premo:

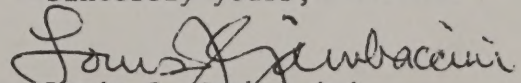
On September 18, 1974, you wrote concerning the PATH Plainfield Corridor Service project and requested a re-evaluation of alternatives to the Plainfield project in the light of new developments. You also indicated a desire to have a State of New Jersey reconsideration of the status of CNJ railroad acquisition, funding priorities and the future of rail corridors in Northern New Jersey.

Pursuant to your request, the State of New Jersey and the Port Authority agreed to the formation of a joint Task Force to undertake the technical analysis and evaluation of the public transportation alternatives involving service to the existing CNJ mainline corridor. New Jersey's Deputy Commissioner of Transportation, Manuel Carballo, and I were designated co-chairman of this Task Force effort and, as you know, the work of the Task Force has proceeded diligently over the last three months. The scope of the Task Force work did not include the other matters you raised. It was decided that inasmuch as the other questions you raised involved fundamental questions of State policy, the State of New Jersey would deal with those separately and report directly to you concerning them.

I am transmitting to you herewith 25 copies of the Task Force report summarizing the technical evaluation of alternatives. The report sets forth the principal alternatives, their fiscal and transport implications and makes no recommendations. We are advised that the other matters which you raised (CNJ acquisition, funding priorities, and the future State plans with respect to rail corridors) will be the subject of a separate communication to you from the State.

Once you and your staff have had an opportunity to review the enclosed report, Mr. Carballo and I, of course, will be happy to meet with you and your staff to discuss it.

Sincerely yours,


Louis J. Gambaccini
Vice President and
General Manager

Atts.

REPORT OF
JOINT NEW JERSEY DEPARTMENT OF TRANSPORTATION-PATH
TASK FORCE ON CNJ CORRIDOR COMMUTER TRANSPORTATION ALTERNATIVES

As a result of a series of meetings between the Urban Mass Transportation Administration (UMTA), the State of New Jersey and PATH in August and September 1974, a letter was transmitted to the Vice President and General Manager of the Port Authority Trans-Hudson Corporation (PATH) from an Associate Administrator of UMTA. The letter requested that PATH reevaluate the proposal for an extension of the PATH rapid transit system to Plainfield on parts of the Penn Central and Central Railroad of New Jersey (CNJ) rights-of-way. PATH had submitted an application for Federal assistance in support of this proposed project to UMTA in April 1974. The application requested assistance in the amount of \$201.5 million, representing 80% of the then estimated total project cost of \$252 million for fixed facilities and rolling stock required for the PATH Plainfield Corridor project improvements west of Newark.

The request for reevaluation by UMTA was based on three principal factors: - a) the possibility of exploring the acquisition of the CNJ by the State of New Jersey, thus raising the question of the impact of such a potential decision on the PATH project as it related to an upgraded CNJ commuter service; b) the possibility that such a decision would result in the re-ordering of priorities for rail service improvements in Northern New Jersey; and, c) the weighing of the costs of such acquisitions and improvements against the overall availability of necessary funds.

Accordingly, PATH and the New Jersey Department of Transportation organized a joint Task Force in October 1974 to undertake a new evaluation of all reasonable alternatives in this Corridor. The Task Force, which was under the co-chairmanship of Manuel Carballo, Deputy Commissioner of the New Jersey Department of Transportation and Louis J. Gambaccini, Vice-President and General Manager of PATH, agreed that because the Urban Mass Transportation Administration's request dealt with both project related technical matters and New Jersey State policy, it would limit its role solely to the evaluation of all reasonable service alternatives for the Corridor. The State of New Jersey agreed to address itself to the UMTA's questions pertaining to exploration of the possibility of acquisition of the CNJ, priorities for rail service in Northern New Jersey and the financial commitments necessary to support these priority projects. The Task Force met on a number of occasions and extensive staff work was undertaken in support of this effort.

Analysis of CNJ Corridor Alternatives

The Task Force initially identified seven alternate physical plans for passenger service in the CNJ Corridor for reexamination. These included the following:

- 1) A PATH extension to Newark Airport and Plainfield as described in the 1974 application.
- 2) A PATH extension via the present Aldene route to Plainfield.
- 3) A completely modernized, upgraded and reequipped CNJ diesel service

from Penn Station, Newark via the Aldene route to Plainfield.

4) A completely modernized CNJ diesel service from Penn Station, Newark to Plainfield via Newark Airport and Elizabeth.

5) An electrified and upgraded CNJ line with new multiple unit equipment from Penn Station, Newark to Plainfield via Aldene.

6) A CNJ electrified service from Penn Station, Newark to Plainfield via Newark Airport and Elizabeth.

7) A Busway on the two northerly tracks of the CNJ from Elizabeth to Plainfield with access provided to the Busway by local streets and major highways at both its westerly and easterly ends.

As a result of intensive review by the Task Force, the seven alternates were reduced to four. These four appeared to be the most realistic possibilities based on cost, service and timing factors. Subsequently, a fifth alternate representing a minimum CNJ upgrading of existing service to Phillipsburg was considered for detailed examination by the Task Force. The five alternates then selected for detailed consideration were:

A) A PATH extension to Newark Airport and Plainfield as described in the 1974 application (see number 1 above);

B) A completely modernized CNJ diesel service via the Aldene route (see number 3 above);

C) A minimally upgraded CNJ diesel service as currently operated;

D) An electrified CNJ via the Aldene route (see number 5 above);

E) A Busway on the CNJ right-of-way (see number 7 above).

Under each of the above alternates, the Task Force developed the capital costs, operating costs, timing, potential funding and operating and service factors involved in providing a service to both Plainfield and Raritan.

PATH Extension to Newark Airport and Plainfield (Alternate A)

The original proposal for the PATH extension, which was developed in late 1971 and 1972, was embodied in bi-State legislation authorizing PATH to proceed with the project. Conceptually, the project entails the extension of the existing PATH system south from Penn Station, Newark to a McClellan Street station serving Newark International Airport and thence south to Elizabeth along the Penn Central right-of-way with a link at Elizabeth to the two north tracks of the CNJ at which point it would continue westerly along the CNJ mainline to a terminus at Plainfield. A map of the Plainfield extension together with pertinent facts on the plan is shown on Figure 1.

The principal advantages of the PATH extension proposal include a

rail service to Newark International Airport (via a transfer at McClellan Street to the proposed airport Inter-Terminal Transportation System or some other form of connecting service); the opportunity for a through rail service to lower Manhattan from the suburban New Jersey territory; and operational savings resulting from the establishment of one rail line in this Corridor as opposed to two "end-to-end" rail services which currently require a transfer at Penn Station, Newark.

The Task Force recognized that the PATH plan does have certain disadvantages. It requires the extension of an interurban rail transit service into a suburban territory accustomed to a standard railroad commuter service and may by its nature result in a less comfortable ride, by virtue of the necessity to utilize smaller, lighter rapid transit cars in the service. The plan also involves a relatively higher capital cost for the number of passengers to be served in relationship to the capital costs of others of the alternates evaluated largely as a result of required new structural, power, signal and rail construction. On the other hand lower operating costs per trip are evident when compared to other rail alternates. Additionally, the plan would result in the termination of through rail service in the Corridor at Plainfield since continuation beyond that point would represent a disproportionately higher cost for the relatively few additional passengers who might be served.

While 80% of the projected passengers in this Corridor would be served directly by the extension to Plainfield, some 20% of the Corridor passengers originate west of Plainfield. Other transportation service would have to be developed to serve these commuters between their points of origin and the Plainfield terminus.

The major work of the Task Force with respect to this alternate was to update the capital and operating costs used in the original project application. In addition, project related elements east of Newark were also reassessed and costs were identified. For purposes of comparability with components of the other alternatives, these data were included in column one on Tables 1 and 2. The PATH project data provided in column two on Tables 1 and 2 excludes the \$55 million estimated capital investment for basic PATH system improvements east of Newark resulting from the PATH Plainfield extension project.

In this work, as well as in the development of construction costs for each of the alternates, the Task Force included an inflation factor of 9% per year for fixed facilities projected to the anticipated time of construction for each element of the capital construction required. For rolling stock, inflation factors reflecting large cost increases already experienced by rail equipment suppliers were 25% for 1975, and 15% for each subsequent year.

In the evaluation of operating expenses and projected revenues, operating and maintenance costs included a composite inflation factor to the year 1985 of approximately 7% per year. In each of the analyses, the Task Force assumed no fare increases for any of the alternates. While this assumption might be unrealistic, it was felt that if all alternates were

compared on this basis, it would remove many of the uncertain aspects of timing, magnitude and procedural processes associated with fare increase applications.

Based on the factors identified above, the PATH extension project, including the capital investment required east of Newark, would involve a total estimated cost of \$402 million, of which an estimated \$80 million would be required as the local share with an estimated \$322 million sought in federal capital assistance. The estimated cost of the project excluding the capital investment east of Newark would total \$347 million, of which an estimated \$69 million would be required as the local share with \$278 million sought in federal capital assistance. These estimated costs include the Airport station at McClellan Street. However, they do not include the cost of a distribution system between the Airport station and the airline terminals at the Airport.

The original estimate of \$252 million for the project contained in the federal application filed in 1974 did not include the additional estimated capital investment required for basic PATH system improvements east of Newark. It also did not include as high an allowance to cover anticipated inflation during the construction period, a change which the Task Force believes is essential in light of the rapid rate of inflation experienced over the last twelve months.

The capital cost to extend the PATH project beyond Plainfield to Raritan is estimated at an additional \$190 million for a total project cost of \$592 million from Newark to Raritan, assuming the inclusion of an investment for east of Newark improvements or \$537 million from Newark to Raritan based on a project assumption which excludes the investment for east of Newark improvements. Of this amount, 80%, \$474 million or \$430 million, depending on the inclusion or exclusion of the east of Newark investment, would be required in federal assistance and \$118 million or \$107 million required from local resources.

While the PATH extension represents the highest capital cost per passenger, an evaluation of the incremental operating expense chargeable to the extension project indicates that it provides the lowest per trip cost of any of the rail alternates considered. The relationship of capital cost and project operating results for the PATH extension to Plainfield and also to Raritan, based on the factors described above, are summarized, along with comparable data for the other alternates studied, in Tables 1 and 2.

CNJ Diesel Service Via Aldene (Alternate B)

The alternate of providing a fully modernized CNJ diesel service to Plainfield or beyond to Raritan, as developed by the Task Force, would encompass the following:

Complete track and signal upgrading and station rehabilitation, (including high level platforms). Construction of additional track connections at Aldene and in the vicinity of Hunter Tower in south Newark to improve operating reliability and capacity and to remove present conflicts in train

operations, and construction of a third track on the section of the Lehigh Valley Railroad extending from Hunter Tower to Aldene to handle a prospective expansion in freight operations over this trackage together with the improved CNJ passenger operations.

Additionally, the project includes the purchase of an entirely new fleet of passenger coaches and diesel locomotives for this service. All estimates of cost, both capital and operating, were escalated to reflect inflation as described in the previous section.

This plan is shown on Figure 2 together with pertinent data on this alternate.

On the basis of these projected improvements, the capital costs of the maximum CNJ diesel improvement program for service to Plainfield would be \$174 million or a cost of \$220 million if extended to Raritan, as detailed in Tables 1 and 2, respectively. It is important to emphasize that these estimates include a figure of \$50 million for the addition of a third track on the 7.2 mile section of the Lehigh Valley, between Aldene Junction and Hunter Tower. United States Railway Association officials have advised the Task Force that its plans under the Regional Rail Reorganization Act contemplate a major expansion in freight operations through this territory. Subject to more detailed examination, it is believed that a third track from Aldene to Hunter Tower, for which this cost allowance has been made, will be sufficient to accommodate the combined total of rail passenger and freight trains.

Inherent in the CNJ diesel alternative is the fact that the projected operating cost, on the basis of the factors described earlier, would be substantially higher than the PATH extension because of the end-to-end interface with PATH as opposed to the unified rail system inherent in the PATH proposal, and the significantly larger labor costs which would derive therefrom. These differences are also reflected in Tables 1 and 2. The CNJ diesel service would have a significantly lower capital cost and a much higher operating cost.

From an overall service standpoint, there are some advantages and disadvantages. These are compared with the other alternates on Table 3. Travel time for the total trip is estimated to be about 9 minutes longer from Plainfield to lower Manhattan than the PATH extension, but only 3 minutes longer to Newark.

Minimally Upgraded CNJ Diesel Service (Alternate C)

The third alternate also shown on Figure 2 involves a minimal amount of upgrading of the existing CNJ service to Phillipsburg via Aldene. This plan would include the rebuilding of existing locomotives for passenger service, the rehabilitation of the newer coaches on the CNJ and a minimum amount of work on track up-grading, station rehabilitation, yard improvements and bridge and drainage improvements. Since rehabilitation of existing CNJ passenger coaches built before World War II does not appear feasible, the largest single item would be the replacement of many of these cars.

The plan would maintain the newly instituted service to Phillipsburg, would operate on all tracks available for service and would duplicate the current operation virtually in all respects. The plan would not include the addition of a third track on the Lehigh Valley nor the improved connections either at Aldene or at Hunter Tower in south Newark.

On the basis of these factors, it is estimated that the fully escalated capital cost for this minimal improvement program would be approximately \$60 million. This would require federal assistance of \$48 million and a local contribution of approximately \$12 million. The capital costs and operating results of this alternative are shown on Tables 1 and 2. The service factors would be similar to those indicated on Table 3 for diesel service, except for running times. Running times would be somewhat longer because of longer loading times (no high level platforms) and the lack of improved connections at Aldene and Hunter.

CNJ Electrified Service (Alternate D)

The alternate of electrifying the CNJ from Newark to Plainfield or Raritan includes the same general physical components as outlined in the CNJ diesel alternate as well as providing for an overhead catenary electrification system along the entire route. This plan appearing on Figure 2 was proposed earlier by the State of New Jersey in their 1968 Master Plan. Electrification of the CNJ would provide a higher level of service as compared to the diesel alternate in terms of operating characteristics. Such a service would result in somewhat better travel times than the CNJ diesel. Passenger comfort would probably be about equivalent. (See Service factors, Table 3).

The capital costs required would be significantly greater than those required for the CNJ diesel alternate. The fully inflated capital costs for the electrified service alternate are estimated at approximately \$336 million for service to Plainfield and \$414 million to Raritan, as shown on Tables 1 and 2. In terms of operating costs, there would be no significant difference between the diesel service and the electrified service.

CNJ Busway

In order to consider the full range of reasonable alternatives for commuter service in this Corridor, the Task Force also investigated the concept of a Busway within the CNJ right-of-way. This plan would involve the acquisition of the two most northerly tracks of the CNJ from Plainfield to Elizabeth with all train operations shifted to the two southerly tracks. The northerly portion of the right-of-way would then be paved with a two-lane roadway for the exclusive use of buses.

With the termination of all rail passenger service, the Busway would operate in the following fashion. Buses would enter the Busway from local streets and highways at the western end as well as at protected intermediate points between Plainfield and Elizabeth; at the eastern end of the Busway at Elizabeth, ramps would be built between the Busway and U.S. Route 1 and between the Busway and the New Jersey Turnpike for access to Newark and Manhattan. The project would include the purchase of 200 of the most modern buses available.

This general plan is shown in Figure 3 together with related information on the specific components of the plan.

Three separate bus services from Plainfield and intervening points would be possible:

- 1) A service via the Busway to Route 1 and thence into Newark Airport and northerly to Penn Station, Newark.
- 2) A service directly to midtown Manhattan via the Busway, the New Jersey Turnpike, Lincoln Tunnel and the Port Authority Bus Terminal.
- 3) A bus service to lower Manhattan via the Busway, the New Jersey Turnpike, the Turnpike extension and a new bus station at the PATH Grove Street station in Jersey City, where bus passengers would transfer to PATH for the trip to lower Manhattan.

Using the same general factors for capital and operating costs as were used for the other alternates, it is estimated that the capital cost of the Busway between Elizabeth and Plainfield, including property acquisition and ramp construction, would be \$164 million, with an estimated 80% of the project cost or \$131 million received in capital assistance from the Federal Government and an estimated local share of \$33 million. While further investigation may show that bus services west of Plainfield could be handled on local streets and highways with buses then entering the exclusive bus roadway at the Plainfield terminus, the Task Force calculated that an extension of the Busway westerly to Raritan would involve an additional capital expenditure of \$131 million.

From a financial standpoint, the operating deficit for the services offered would be considerably less than any of the other alternates. The capital costs and operating results for services to Plainfield and Raritan are shown on Tables 1 and 2, respectively.

The CNJ Busway has advantages in the flexibility of services provided. Its service characteristics are shown on Table 3. On balance, these service characteristics are clearly inferior to rail. Additionally, this is not a rail solution in a Corridor that has been historically served by rail and, as such, there may well be serious questions as to user acceptability.

* * *

In addition to the capital and operating data for each of the alternates, Tables 1 and 2 also contain a summary of the 1985 traffic forecasts developed. The traffic estimates vary between the alternates as a direct function of the service provided by each. For example, the traffic forecasts for the PATH extension via Newark Airport with its more frequent service incorporate the Airport passengers and employees in the forecasted figures, as well as a larger volume of local intrastate passengers. In contrast, the CNJ alternates do not include any Airport traffic. The 1985 traffic forecasts within the Corridor reflect approximately a 20% increase over the

1974 daily traffic on the existing CNJ service. The increases generally reflect improved levels of service, and modest levels of population and employment growth.

Selected Non-Economic Factors

Table 3 is a comparison of some selected non-economic factors, i.e., construction timetables, service frequency, convenience, travel time, environmental impact, etc., of the four basic alternates considered in the CNJ Corridor. It is recognized that some of these comparisons are subjective and qualitative in nature, but they are included to show the comparative variation of these factors.

Analysis of Public Transportation Service to Newark Airport

As indicated, the PATH extension would provide a rail service to Newark Airport via the Inter-Terminal Transportation System (ITTS) or some other connecting service as a part of the total plan for ground access. The two CNJ rail alternates, i.e., diesel and electrification, would not in themselves provide a rail service to the airport, since both plans would utilize the existing alignment (north and west of the airport) via the Lehigh Valley Aldene route to serve the CNJ Corridor. The CNJ Busway alternate would provide bus service to and from Newark International Airport and Penn Station, Newark and the CNJ Corridor communities via the ramp connections at Route 1.

The Task Force reconsidered the basic question of need for rail service to Newark International Airport. This, in turn, led to a detailed analysis of present traffic volumes, the distribution of passengers utilizing the Airport and future projections of Airport usage.

Newark International Airport experienced serious erosion in patronage levels in 1974 as a result of a number of factors which together have resulted in sharp reductions in airline scheduling. These include the overall depressed state of the economy, the difficult financial condition of the airlines and the sharp increases in the cost of aviation fuel. At the same time, there has been a very marked decline of Manhattan-oriented air passengers at Newark. These factors have all interacted to produce a radically different situation at Newark Airport today from that which was expected at the time of the initial planning for ground access requirements some five years ago.

Table 4 shows the distribution of Newark International Airport air passengers and employees to and from various northern New Jersey and New York counties as derived from surveys of air passengers and Airport employees. The Manhattan portion of the Newark Airport passenger and employment market shown in Table 4, 9.4% of the total, has declined from approximately 19% in 1968. Table 4 also shows that the percentage share of trips to and from the City of Newark by air passengers and employees has risen only slightly from 7.9% in 1968 to 8.5% in 1974. These core origins and destinations make up the major market potential for public transportation service, yet the density of travel to and from these principal origin and

destination points is only 18% of the total airport trips or about 4,000 trips per day. The table also indicates that with the exception of Union County, which might generate some public transportation trips, other Northern New Jersey counties surrounding Newark Airport all generate traffic in the range of 2 to 10% of the total. Because of the wide dispersal of these passengers, few of them represent any real potential for rail service at the present time.

In light of these developments, forecasts of NIA air passenger traffic for 1980 and 1985 are most difficult to develop with any confidence. The problem is based largely on the question of whether or not the 1974 phenomena represent a permanent or temporary situation.

While one of the Port Authority's planning assumptions for future Newark International Airport development is the installation of an automated fixed guideway Inter-Terminal Transportation System, the Task Force believes that it would be most prudent to proceed with caution on major capital expenditures for ground access facilities at the Airport until such time as the severe traffic declines described above show some evidence of reversal.

The Task Force did undertake, however, an evaluation of an interim express bus circulation system, described below, which could be implemented very quickly to connect Pennsylvania Station, Newark, the TNJ Broad Street Terminal as well as the Erie Lackawanna, Newark Terminal with each of the Airport Terminal facilities. This service would provide the requisite access to the Airport until such time as a McClellan Street Station is constructed either within the PATH Corridor Service Project or a Penn Central Project. Further, it would also test and, in fact, assist in building the market for a future fixed guideway system installation at the Airport.

At the time that such a system decision is to be made, the Task Force is hopeful that federal financial assistance for both off-airport as well as on-airport ground access facilities will be available under the Airport and Airways Development (ADAP) Act. The Port Authority has actively supported the enlargement of ADAP scope to cover the costs of such public transport access to airports.

Notwithstanding the radical change that has taken place in the pattern of Newark International Airport passengers, and the fact that the facility has not reached anticipated overall traffic levels, the Task Force reexamined several alternate rail services to and from Newark International Airport in some detail in order to have an updated picture of the capital cost and other factors involved in providing such services. Since the PATH proposal permits airport access via a transfer at McClellan Street, this analysis was premised on the assumption that if the PATH extension to the Airport and Plainfield were not constructed, then a determination would be required whether there are any realistic options to providing access to the Airport in conjunction with development of some alternate CNJ corridor plan. The Task Force identified four alternate access plans. (See Figure 4.)

PATH Extension from Penn Station, Newark to the Airport with a Full Airport Loop

In 1968, Port Authority staff had prepared a plan visualizing an extension of PATH to the Airport from Penn Station, Newark south along the west side of the Penn Central right-of-way, thence crossing over the Penn Central Mainline to a full elevated loop around the inside of the three airline terminal buildings. Stations were to be provided at each terminal. The plan was reviewed in detail by the consulting firm of Parsons, Brinckerhoff, Quade & Douglas in 1969. It was subsequently dropped from further consideration as being totally uneconomic with a very high capital cost in comparison to the relatively few number of passengers served. This plan was virtually identical to the plan recently proposed by the Regional Plan Association.

As part of its assignment, the Task Force updated the earlier estimates on this plan, using generally the same factors as applied to the CNJ Corridor alternatives including a 9% annual inflation factor on fixed facilities. On this basis, the original PATH-NIA extension plan is estimated to involve a capital cost of \$210 million. (See Table 5).

McClellan Street Station on the Penn Central

In 1970, the Port Authority developed a plan for rail service to Newark International Airport which involved the construction of a new station on the Penn Central Mainline at McClellan Street in south Newark near the Elizabeth boundary line with an extension of the Inter-Terminal Transportation System (ITTS) from that station to serve the three airline terminals at the Airport. The plan was based on the assumptions that the major Newark Airport public transportation market was for passengers to and from mid-Manhattan, served directly by the Penn Central via Penn Station, New York and that such a station at McClellan Street would also serve Penn Central traffic to and from the Airport and the south, e.g., New Brunswick, Trenton, Red Bank, etc.

The Task Force updated the capital cost of the McClellan Street station and the extension of the proposed airport ITTS. The new figures indicate that the McClellan Street plan is currently estimated to cost \$107 million to develop fully. Table 5 also indicates that if, under this plan, the airline terminals were served by bus from the McClellan Street Airport Station, considerable savings in capital costs could be achieved.

Extension of the ITTS from Newark Airport to Penn Station, Newark

In addition in 1970, the Port Authority developed an alternate plan involving the extension of the proposed airport ITTS off the Airport and north along the right-of-way of the Penn Central to a terminal and transfer point at Penn Station, Newark. The ITTS which generally has been conceived as similar to those systems now in operation at the Tampa and Seattle Airports, would involve, under this concept, a single transfer only at Penn Station, Newark for potential passengers to and from several different

market areas. Updating of earlier cost estimates has resulted in an estimated full capital cost of this system of \$219 million as shown in Table 5.

* * *

The capital costs, estimated construction period and estimated traffic volumes for all of the Newark Airport ground access alternatives are shown on Table 5. The estimated 1985 traffic volumes for each alternative vary based on the type of service which would be provided in each case.

Finally, in Table 5, it should be emphasized that those costs in the first two columns under the PATH extension do not represent a complete service to Newark Airport, but are merely the Newark Airport incremental elements of the total plan for the PATH extension to Plainfield. On the other hand, all of the other alternates shown on Table 5 are complete plans in and of themselves.

Express Bus to Newark Stations

In the last column of Table 5, it is shown that for an immediate capital investment of about \$100,000, a special express bus service between Newark Airport and Penn Station, Newark, TNJ Broad Street Terminal and Erie Lackawanna Broad Street Station could be provided. Such a bus service, involving the use of modern minibuses, could operate between the Airport and downtown Newark transportation centers on 15-minute headways during the peak hours and 20 minute headways during the off peak. The special express minibus service could be put in operation within six to eight months time and, with a high level of promotion of its availability, offer an opportunity for a real test of the public transportation market potential between the Airport and these Newark centers.

Based on the assumption that one of the large bus carriers currently serving Northern New Jersey would provide this proposed service, it is estimated that this plan at the outset would incur an operating deficit in the order of \$200,000 annually on the basis of an assumed \$.75 fare for air passengers and \$.50 for employees. The highlights of the plan from the standpoint of capital and operating costs and traffic potential are developed in Table 6.

CNJ CORRIDOR ALTERNATIVES TO PLAINFIELD

TABLE 1

<u>PATH EXTENSION</u> ⁽¹⁾	<u>CNJ RAIL ALTERNATES</u>			<u>BUSWAY</u>
	<u>Minimum Diesel</u> <u>Excluding</u> <u>Third Track</u>	<u>Maximum Diesel</u> <u>Including</u> <u>Third Track</u>	<u>Electric</u> <u>Including</u> <u>Third Track</u>	
				<u>CNJ Corridor</u>

I. Capital

A. Construction Project Costs

Total Project	\$ 402M ⁽²⁾	\$ 347M ⁽²⁾	\$ 60M	\$ 174M	\$ 336M	\$ 164M
Per Passenger	28,500	24,600	7,100	20,600	39,300	15,600
Local Resources	80M	69M	12M	35M	67M	33M
Per Passenger	5,700	4,900	1,400	4,100	7,800	3,100
Federal Grant	322M	278M	48M	139M	269M	131M

B. Debt Service

Total Project	\$ 33.5M	\$ 28.3M	\$ 4.9M	\$ 14.2M	\$ 27.4M	\$ 13.4M
Local Resources	7.3M	6.4M	1.0M	2.9M	5.5M	2.7M

II. Operating Results (assumes no fare increases)

A. Operating Deficit (1985) Excl. Capital

Total Project	\$ 6.4M ⁽³⁾	\$ 6.4M ⁽³⁾	\$ 14.8M	\$ 15.0M	\$ 14.9M	\$ 6.2M
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B. Operating Deficit (1985) Incl. Capital

Total Project (Incl. Fed. Cap. Grant)	\$ 39.9M	\$ 34.7M	\$ 19.7M	\$ 29.2M	\$ 42.3M	\$ 19.6M
Per Passenger Trip	4.87	4.23	4.48	6.58	9.42	3.44
Local Resources (Excl. Fed. Cap. Grant)	13.7M	12.8M	15.8M	17.9M	20.4M	8.9M
Per Passenger Trip	1.67	1.56	3.59	4.03	4.53	1.55

Total Passengers (1985)

Annual	\$ 8.2M	\$ 8.2M	\$ 4.4M	\$ 4.4M	\$ 4.5M	\$ 5.7M
Daily One Way	14,100	14,100	8,500	8,500	8,600	10,500

M = Million

1) Includes Airport station but excludes connecting service from Airport station to airline terminals.

2) Column one includes (Column two excludes) an estimated capital investment of \$55 million for basic PATH system improvements east of Newark resulting from the PATH Plainfield Extension Project.

3) Assumes revenues from Airport connecting services would cover operating expenses.

1/15/75

CNJ CORRIDOR ALTERNATIVES TO RARITAN

TABLE 2

	PATH EXTENSION ⁽¹⁾		CNJ RAIL ALTERNATES			BUSWAY CNJ Corridor
			Minimum Diesel	Maximum Diesel	Electric	
			Excluding Third Track	Including Third Track	Including Third Track	
I. Capital						
A. Construction Project Costs						
Total Project	\$ 592M ⁽²⁾	\$ 537M ⁽²⁾	\$ 60M	\$ 220M	\$ 414M	\$ 295M
Per Passenger	42,000	38,100	7,100	25,900	48,100	28,100
Local Resources	118M	107M	12M	44M	83M	59M
Per Passenger	8,400	7,600	1,400	5,200	9,700	5,600
Federal Grant	474M	430M	48M	176M	331M	236M
B. Debt Service						
Total Project	\$ 49.0M	\$ 43.8M	\$ 4.9M	\$ 17.9M	\$ 33.8M	\$ 24.0M
Local Resources	10.4M	8.7M	1.0M	3.6M	6.8M	4.8M
II. Operating Results (assumes no fare increases)						
A. Operating Deficit (1985) Excl. Capital						
Total Project	\$ 10.7M ⁽³⁾	\$ 10.7M ⁽³⁾	\$ 14.8M	\$ 15.9M	\$ 15.8M	\$ 9.8M
B. Operating Deficit (1985) Incl. Capital						
Total Project (Incl. Fed. Cap. Grant)	\$ 59.7M	\$ 54.5M	\$ 19.7M	\$ 33.8M	\$ 49.6M	\$ 33.8M
Per Passenger Trip	7.28	6.65	4.48	7.61	11.05	5.93
Local Resources (Excl. Fed. Cap. Grant)	21.1M	19.4M	15.8M	19.5M	22.6M	14.6M
Per Passenger Trip	2.57	2.37	3.59	4.39	5.03	2.56
Total Passengers (1985)						
Annual	8.2M	8.2M	4.4M	4.4M	4.5M	5.7M
Daily One Way	14,100	14,100	8,500	8,500	8,600	10,500

1) Includes Airport station but excludes connecting service from Airport station to airline terminals.

M = Million

2) Column one includes (Column two excludes) an estimated capital investment of \$55 million for basic PATH system improvements east of Newark resulting from the PATH Plainfield Extension Project.

3) Assumes revenues from Airport connecting services would cover operating expenses.

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TABLE 3

CNJ CORRIDOR ALTERNATIVES TO PLAINFIELD
Non-Economic Factors

	<u>PATH Extension</u>	<u>CNJ Diesel</u>	<u>CNJ Electric</u>	<u>CNJ Bus Way</u>
Construction Timetable	1976-80 (48 months)	1977-80 (44 months)	1977-81 (48 months)	1977-81 (40 months)
Service Requirements West of Plainfield	Separate Service or Costly Extension	Could extend at Minimum Cost	Costly Extension Required	Service on local high- ways or costly extension
Direct to Lower Manhattan	Yes	No (1 Transfer)	No (1 Transfer)	No (1 Transfer).
Direct to Mid-Manhattan	No (1 Transfer)	Improbable	Improbable	Yes
Service to Newark Airport	Yes	No	No	Yes
Travel Time (min.)				
- Plainfield - WTC	46	55	48	43
- Plainfield - Newark	28	31	25	*34
Frequency of Service (min.)				
- Peak	3-6	10-15	10-15	**3-8
- Off-Peak	30	60	60	20
Relative Equipment Comfort	Fair	Good	Good	Fair
Environmental Impact Analysis (EIA)	EIA Complete	Amended EIA Required	Amended EIA Required	New EIA Required
Agreements on Labor Protection	Obtained	Required	Required	Required
Impact on Freight Operations	Minimal	***Potentially Significant	***Potentially Significant	Minimal

* Express service

** 3 separate services to Newark, World Trade Center & Port Authority Bus Terminal

*** Depending upon U.S. Railway Association plans

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Air Passenger and Employee Trips
To and From Newark International Airport
By Ground Transportation
(Average Day)

<u>Origin or Destination</u>	<u>1968</u>	<u>Per Cent</u>	<u>1974</u>	<u>Per Cent</u>
<u>West of Hudson</u>				
Orange	168	0.7	111	0.5
Rockland	158	0.7	106	0.5
Bergen	1,854	8.0	1,814	8.1
Passaic	600	2.6	540	2.4
Morris	1,118	4.8	1,425	6.4
Essex	4,140	17.8	4,904	21.9
(Newark)	(1,822)	(7.9)	(1,902)	(8.5)
Hudson	1,332	5.7	1,171	5.2
Union	2,712	11.7	2,901	13.0
Richmond (Staten Island)	416	1.8	286	1.3
Somerset	426	1.8	498	2.2
Middlesex	1,804	7.8	1,872	8.4
Monmouth	1,108	4.8	1,406	6.3
<u>East of Hudson</u>				
Manhattan	4,406	19.0	2,100	9.4
(Uptown)	(706)	(3.1)	(383)	(1.7)
(Midtown)	(3,346)	(14.4)	(1,335)	(6.0)
(Downtown)	(354)	(1.5)	(382)	(1.7)
Other Areas East of Hudson	1,200	5.2	672	3.0
<u>Outside Metropolitan Area</u>	<u>1,758</u>	<u>7.6</u>	<u>2,594</u>	<u>11.4</u>
	23,200	100.0	22,400	100.0

NEWARK AIRPORT
GROUND ACCESS ALTERNATIVES

TABLE 5

	<u>PATH Extension (Plainfield)</u>		<u>PATH Extension (Airport Loop)</u>	<u>PC McClellan St.</u>	<u>ITTS Extension to Penn Sta., Newark</u>		<u>Express Bus to Newark Stations</u>
	<u>ITTS Connection to Airline Tmls.</u>	<u>Bus Connection to Airline Tmls.</u>		<u>ITTS Connection to Airline Tmls.</u>	<u>Bus Connection to Airline Tmls.</u>		
Capital Cost	\$ 94M	\$ 18M	\$ 210M	\$ 107M	\$ 31M	\$ 219M	\$100,000
Const. Period	1976-80		1977-80	1977-80		1977-80	1975
Est. Traffic (1985) Daily One Way	3,150	2,850	4,000	4,600	4,150	3,500	620 (1975)
Capital Cost/Passenger	\$29,800	\$ 6,300	\$52,500	\$23,300	\$ 7,500	\$62,600	160

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EXPRESS BUS SERVICE

Newark Airport - Downtown Newark*

Estimated Annual Results - First Year Operation

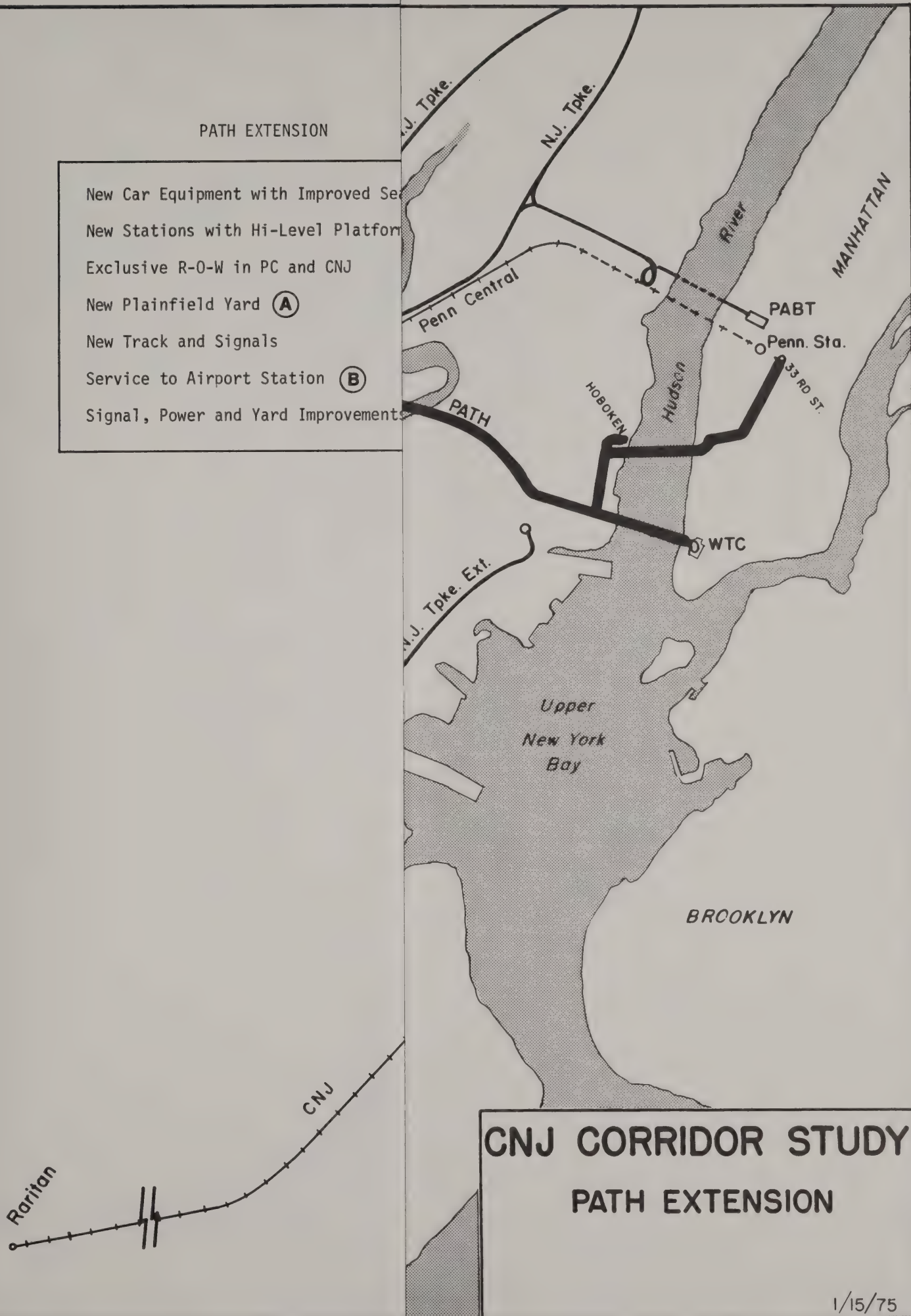
Capital Costs	\$100,000
Development Period	Available in 6 months
Estimated Traffic	
Annual	\$400,000
Peak Hour	80
Daily	620
Capital Cost/Passenger	160
Revenues**	\$270,000
Operating Costs	\$437,000
Operating Deficit	\$167,000
Debt Service	\$ 39,000
Estimated Total Annual Deficit	\$206,000

* Stops at Penn Station; TNJ Terminal; E-L Broad St. Station.

** At 75¢ per ride for passengers, 50¢ for employees.

PATH EXTENSION

New Car Equipment with Improved Service
 New Stations with Hi-Level Platforms
 Exclusive R-O-W in PC and CNJ
 New Plainfield Yard (A)
 New Track and Signals
 Service to Airport Station (B)
 Signal, Power and Yard Improvements

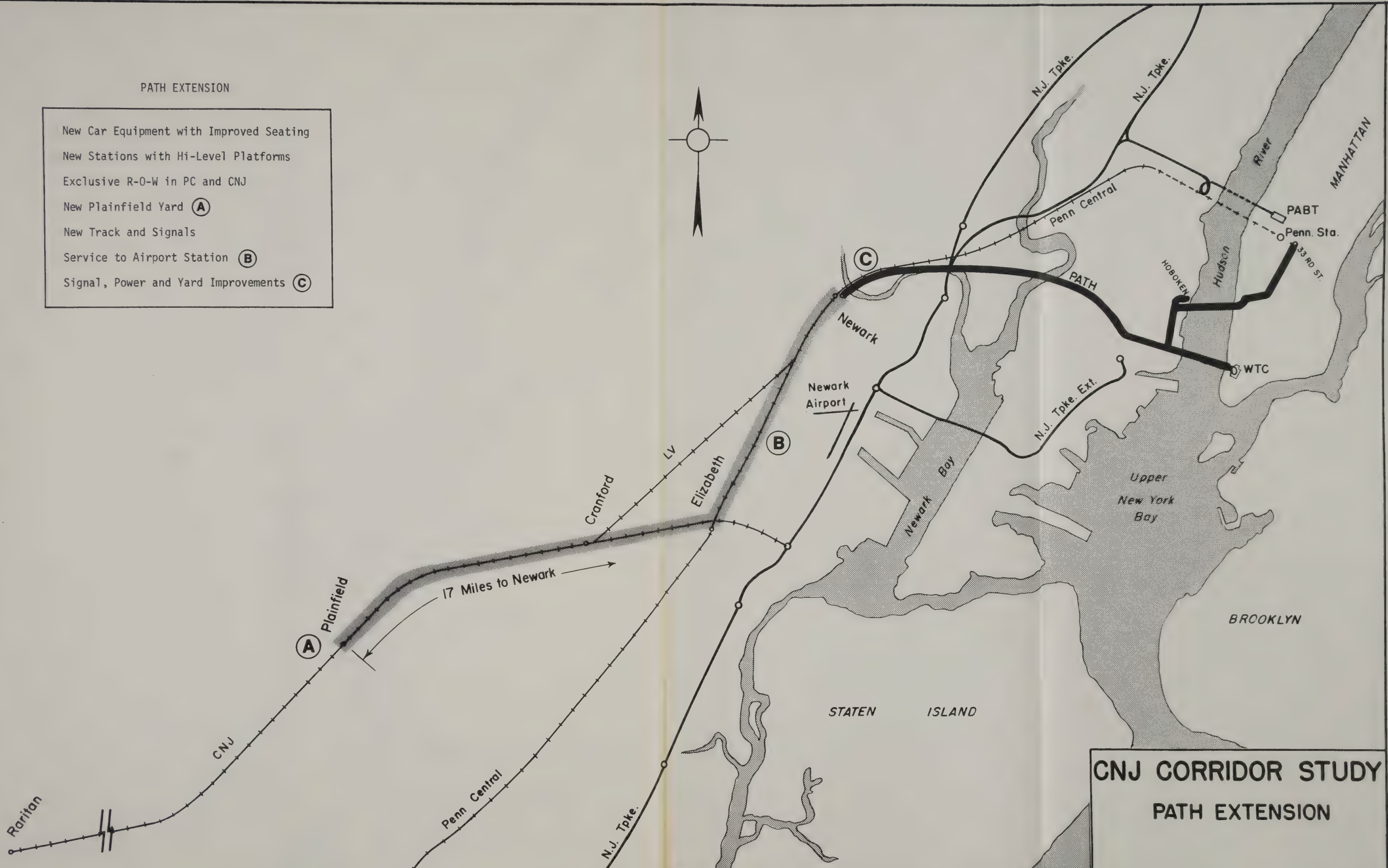


CNJ CORRIDOR STUDY

PATH EXTENSION

PATH EXTENSION

- New Car Equipment with Improved Seating
- New Stations with Hi-Level Platforms
- Exclusive R-O-W in PC and CNJ
- New Plainfield Yard (A)
- New Track and Signals
- Service to Airport Station (B)
- Signal, Power and Yard Improvements (C)



CNJ CORRIDOR STUDY
PATH EXTENSION

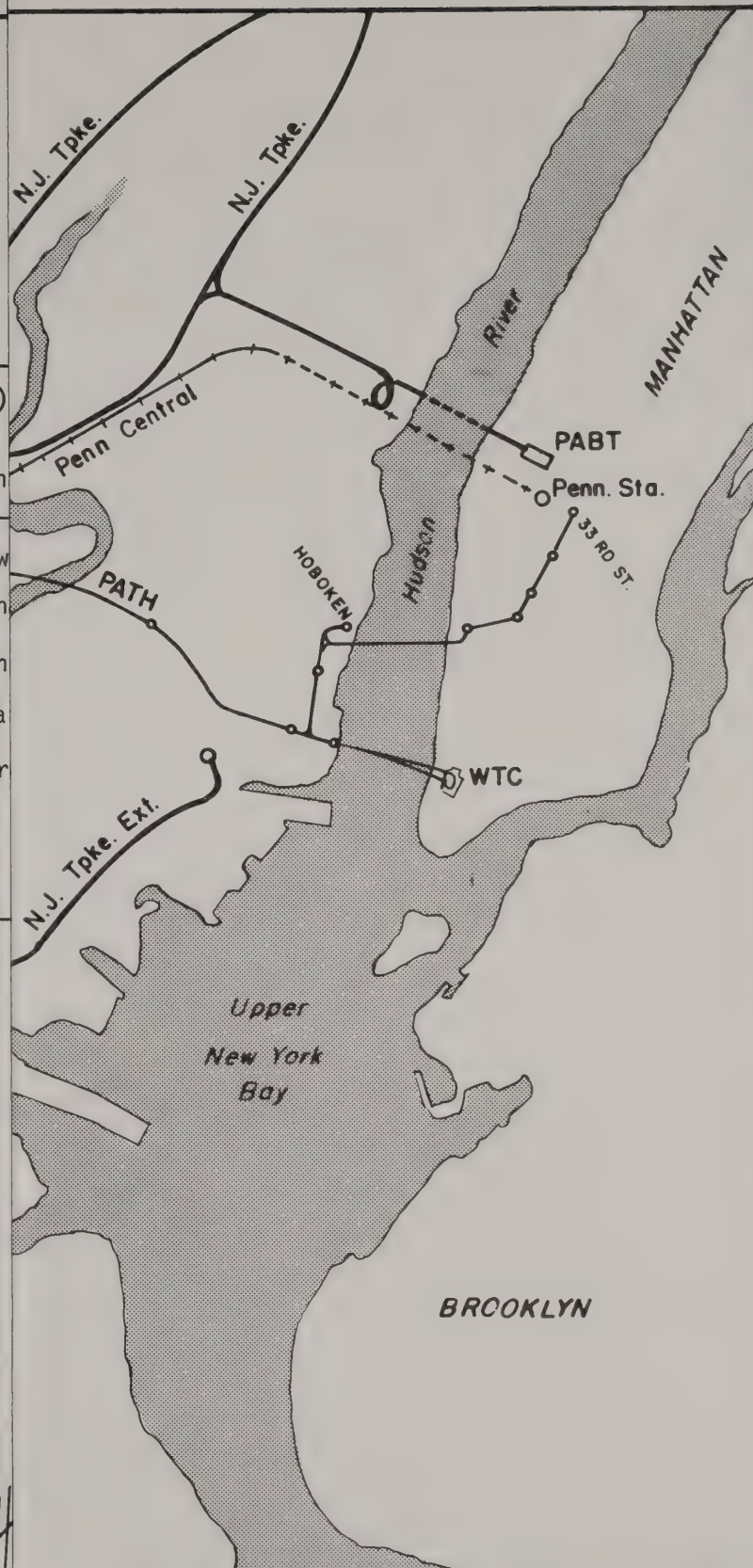
1/15/75

Figure 2

EXISTING CNJ CORRIDOR



- ① Min
- New
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- Min
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CNJ CORRIDOR STUDY

3 CNJ RAIL ALTERNATES

- ① Minimum Diesel
- ② Maximum Diesel
- ③ Maximum Electric

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Figure 2

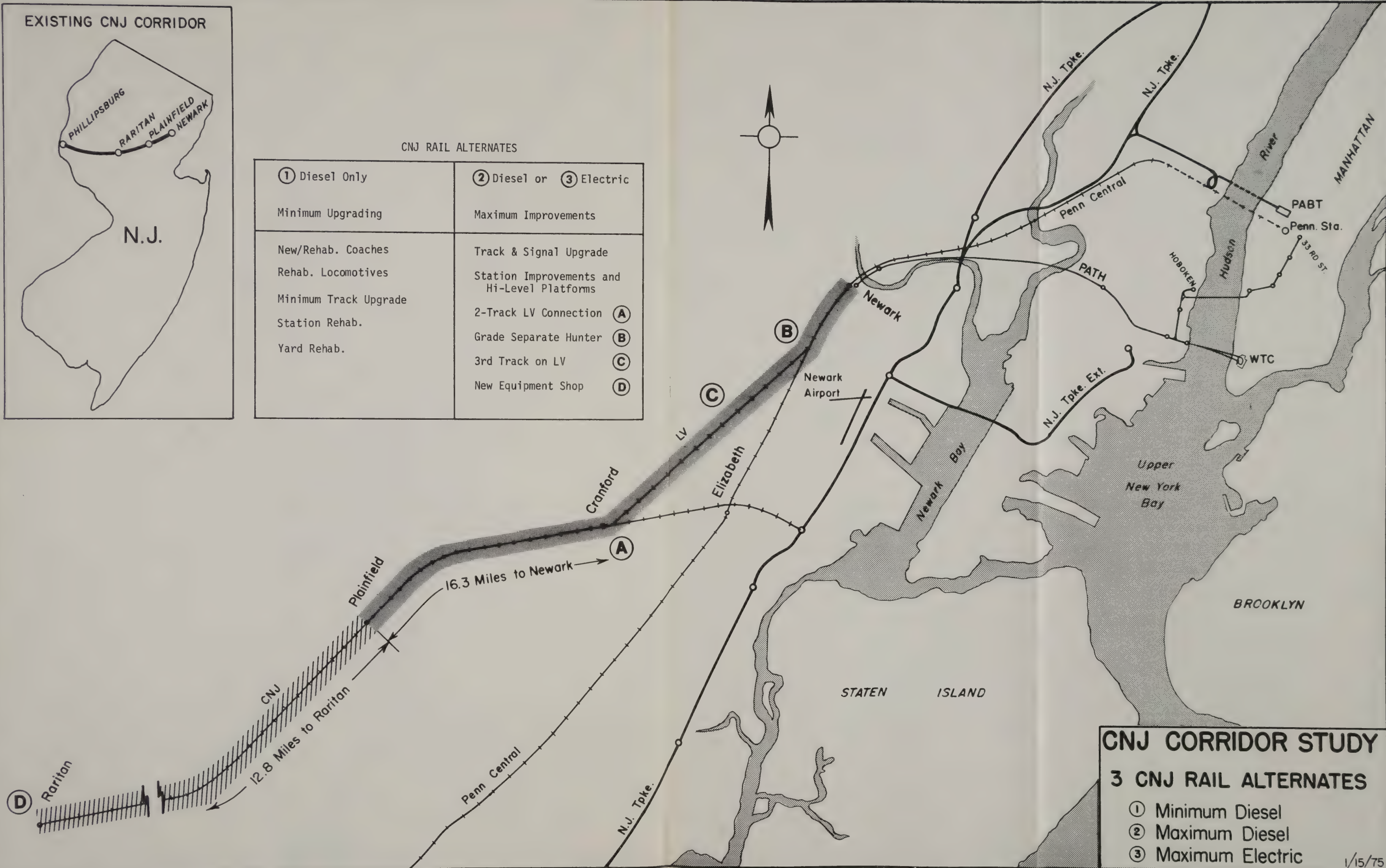


Figure 3

BUSWAY

New 40-Passenger Commuter Buses

Existing CNJ Stations Upgraded

Pave 2 North CNJ Tracks

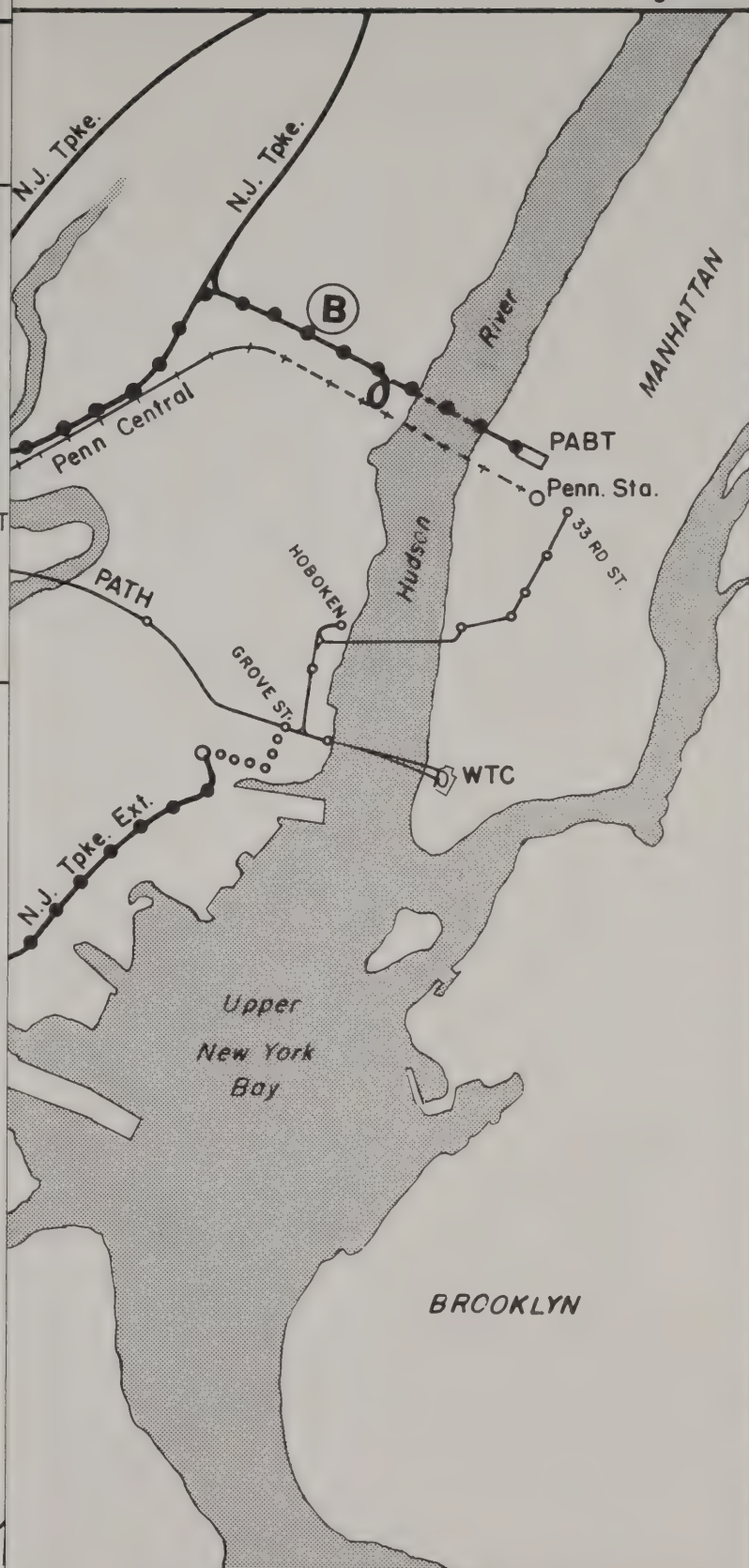
Connecting Ramps to N.J. Turnpike
and U.S. Route 1-9 (A)

Three Services:

Turnpike & Excl. Bus Lane to PABT

Turnpike Extension to PATH Grove

U.S. 1-9 to Newark via Airport



CNJ CORRIDOR STUDY BUSWAY

Figure 3

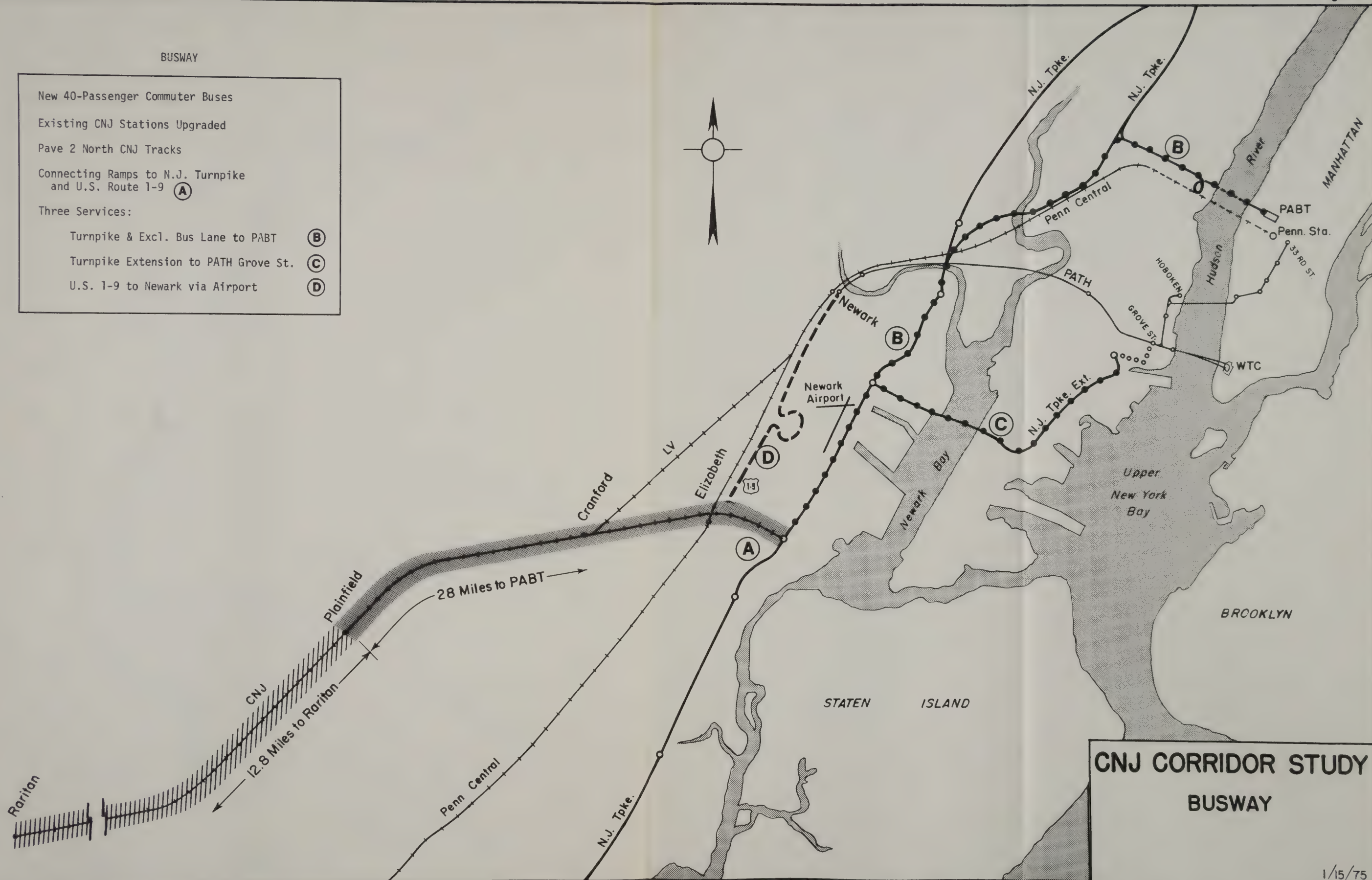
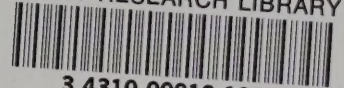


Figure 4



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